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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/810,888	03/29/2004	Tomohiro Satoh	000409-109	1075
21839	7590	10/06/2006		EXAMINER
				SCHNEIDER, CRAIG M
			ART UNIT	PAPER NUMBER
				3753

DATE MAILED: 10/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/810,888	SATOH, TOMOHIRO
	Examiner	Art Unit
	Craig M. Schneider	3753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 8/9/2006.  
 2a) This action is **FINAL**.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1,2 and 4-8 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-2 and 4-8 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 3/29/04 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date: _____
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)	5) <input type="checkbox"/> Notice of Informal Patent Application
Paper No(s)/Mail Date: _____	6) <input type="checkbox"/> Other: _____

## DETAILED ACTION

### *Drawings*

1. The drawings were received on 8/9/2006. These drawings are not acceptable.
2. The drawings are objected to under 37 CFR 1.84(a) because they fail to show the hatching to depict the solid area of the cross section for the spool in Figures 2, 3, 4a, 4b, 4c, 7, and 9 as described in the specification. (Note: The attempted correction on the hatchings for Fig. 3, 4a, 4b, and 4c were ok but there still were other problems. The hatching for Figures 2 and 9 must encompass the complete spool since there is nowhere in the specification that talks about the other side of the spool being a complete cylinder as in the other Figures listed above.) The drawings further do not render obvious in light of the specification what is depicted on the inner right side of the spool adjacent the hash mark in Figures 3, 4a, 4b, and 4c. (Note: The examiner understands that the inner right side of Figures 3, 4a, 4b, and 4c depicts what the slot looks like without the cutaway but putting this on the right side of the spool with the outer edge looking like the other side of the complete spool is very confusing. The only way the examiner can think to fix this would be to create a complete separate drawing for this depiction for each Figure.) Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several

views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "21e and 21f" has been used to designate both a concave cutout on the left side of the spool in Figure 3 and 4a and the inner side of the right side of the spool which appears to be a convex cutout in Figure 3 and 4a. "21e and 21f" are further depicted as cutouts of the body in Figure 9.

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 21e1, 21e2, 21f1, and 21f2. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Specification***

5. The disclosure is objected to because of the following informalities: The inserted paragraph immediately following the paragraph ending on page 6 with "...between the

spool valve 21 and the valve body." that starts "As shown in FIGS 2,3..." and ends "opposite to the first direction." needs to have "21c." in line 4 changed to --20c--.

Appropriate correction is required.

***Claim Objections***

6. Claim 7 is objected to because of the following informalities: In line 25 "liner" should be changed to --linear--. Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. Claims 1-2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sudani et al. (2002/0134443) in view of McWilliams et al. (3,556,155).

Sudani et al. disclose a hydraulic pressure control device comprising a cylindrical valve body (31); a line port (35) provided in the valve body and supplied with a hydraulic fluid; a supply port (36) provided in the valve body and supplying the hydraulic fluid; a spool valve (32) disposed in the valve body and slidable along an inner surface of the valve body along an axis; a linear solenoid valve (10) regulates hydraulic fluid pressure in a first conduit (23), the hydraulic pressure in the first conduit provides force against the spool valve in a first direction along the axis; a feedback conduit (326) fluidly connects to the supply port, hydraulic pressure in the feedback conduit provides a force against the spool valve in a second direction that is opposite to the first direction; the hydraulic pressure in the first conduit and the hydraulic pressure in the feedback conduit together contribute to an overall force on the spool valve that controls the physical

relationship between the spool valve and the valve body; at least one land portion (322) provided at the spool valve and slidable along the inner surface of the valve body; and at least one recess (323) provided at an edge of the land portion of the spool valve (page 2, para. 34 and 39 and page 3, para. 41, 44, and 47-51). Sudani et al disclose all the features of the claimed invention except that the hydraulic pressure control device has a recess wherein cross-sectional opening area being open to the inlet port between the recess and the inner surface of the valve body continuously changes in sliding direction of the spool valve, and the cross-sectional opening area of the recess is formed to have a proportional relationship between flow quantity of a hydraulic fluid and moving distance of the spool valve. McWilliams et al. disclose wherein the cross sectional opening area being open to the inlet port between the recess (52, 54, 56, and 58) and the inner surface of the valve body continuously changes in sliding direction of the spool valve, and the cross-sectional opening area of the recess is formed to have a proportional relationship between flow quantity of a hydraulic fluid and moving distance of the spool valve (col. 2, line 1 to col. 3, line 6).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the recesses of McWilliams et al. onto the spool of Sudani et al., in order to prevent cavitation (col. 2, lines 69-72).

9. Claim 5 is rejected under 35 U.S.C. 103(a) as obvious over Sudani et al in view of McWilliams et al.

The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product in

the prior art, the claim is unpatentable even though the prior product was made by a different process (see MPEP 2113).

10. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sudani et al. (2002/0134443) in view of Lee (2,747,612).

Sudani et al. disclose a hydraulic pressure control device comprising a cylindrical valve body (31); a line port (35) provided in the valve body and supplied with a hydraulic fluid; a supply port (36) provided in the valve body and supplying the hydraulic fluid; a spool valve (32) disposed in the valve body and slidable along an inner surface of the valve body along an axis; a linear solenoid valve (10) regulates hydraulic fluid pressure in a first conduit (23), the hydraulic pressure in the first conduit provides force against the spool valve in a first direction along the axis; a feedback conduit (326) fluidly connects to the supply port, hydraulic pressure in the feedback conduit provides a force against the spool valve in a second direction that is opposite to the first direction; the hydraulic pressure in the first conduit and the hydraulic pressure in the feedback conduit together contribute to an overall force on the spool valve that controls the physical relationship between the spool valve and the valve body; and at least one land portion (322) provided at the spool valve and slidable along the inner surface of the valve body (page 2, para. 34 and 39 and page 3, para. 41, 44, and 47-51). Sudani et al disclose all the features of the claimed invention except that the hydraulic pressure control device has at least one recess provided at a wall of the inner surface of the valve body facing the outer surface of the spool valve; wherein cross-sectional opening area being open to the inlet port between the recess and the inner surface of the valve body continuously

changes in sliding direction of the spool valve, and the cross-sectional opening area of the recess is formed to have a proportional relationship between flow quantity of a hydraulic fluid and moving distance of the spool valve. Lee discloses at least one recess (70) provided at a wall of the inner surface of the valve body facing the outer surface of the spool valve; wherein the cross sectional opening area being open to the inlet port between the recess and the inner surface of the valve body continuously changes in sliding direction of the spool valve, and the cross-sectional opening area of the recess is formed to have a proportional relationship between flow quantity of a hydraulic fluid and moving distance of the spool valve (col. 7, lines 8-33).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the recess of Lee onto the wall passageways of Sudani et al., in order to decrease the power actuating means (col. 7, lines 27-33).

11. Claims 1-2, 4, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wakahara et al. (5,819,192) in view of Lou (2002/0007857) and McWilliams et al. (3,556,155).

Wakahara et al. disclose a hydraulic pressure control device comprising a friction engagement means including a drive rotor (58c) and a driven rotor (58a), a piston (58e) pushing a plurality of clutch discs (58b and 58d) between the drive rotor and a driven rotor and engaging the drive rotor with the driven rotor, a hydraulic pressure chamber (58f) defined by the hydraulic pressure for changing a pushing force of the piston (col. 3, line 40 to col. 4, line 9), a hydraulic pressure control mechanism (40) controlling hydraulic pressure to be supplied to the hydraulic pressure chamber, a cylindrical valve

body (40b) provided at the hydraulic pressure control mechanism, a spool valve (40G) disposed in the valve body and slidable along an inner surface of the valve body, at least one land portion provided at the spool valve and slidable along the inner surface of the valve body (col. 10, lines 29-65); a linear solenoid valve (34) regulates hydraulic fluid pressure in a first conduit (40P1), the hydraulic pressure in the first conduit provides force against the spool valve in a first direction along an axis; and a linear solenoid valve regulating a hydraulic pressure in the first conduit (col. 10, line 66 to col. 11, line 35) . Wakahara et al. does not disclose a feedback conduit fluidly connects to the supply port, the hydraulic pressure in the feedback conduit provides a force against the spool valve in a second direction that is opposite to the first direction; the hydraulic pressure in the first conduit and the hydraulic pressure in the feedback conduit together contribute to an overall force on the spool valve that controls the physical relationship between the spool valve and the valve body; at least one recess provided at an edge of the land portion of the spool valve wherein cross sectional opening area between the recess and the inner surface of the valve body continuously decreased in sliding direction of the spool valve from the edge portion of the land portion. Lou discloses a feedback conduit (54) fluidly connects to the supply port (34), the hydraulic pressure in the feedback conduit provides a force against the spool valve in a second direction that is opposite to the first direction (page 1, para. 13-18). McWilliams et al. disclose at least one recess provided at an edge of the land portion of the spool valve wherein cross-sectional opening area between the recess and the inner surface of the valve body continuously changes in sliding direction of the spool valve.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the feedback conduit of Lou onto the hydraulic pressure control device of Wakahara et al., in order to provide stability to the valve (page 1, para. 7).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the recess of McWilliams et al. onto the spool of Wakahara et al. and Lou, in order to have more control of the fluid that is passing through the valve instead of a sudden surge (col. 1, lines 39-49).

12. Claims 6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wakahara et al. (5,819,192) in view of Lou (2002/0007857) and further in view of Lee (2,747,612).

Wakahara et al. disclose a hydraulic pressure control device comprising a friction engagement means including a drive rotor (58c) and a driven rotor (58a), a piston (58e) pushing a plurality of clutch discs (58b and 58d) between the drive rotor and a driven rotor and engaging the drive rotor with the driven rotor, a hydraulic pressure chamber (58f) defined by the hydraulic pressure for changing a pushing force of the piston (col. 3, line 40 to col. 4, line 9), a hydraulic pressure control mechanism (40) controlling hydraulic pressure to be supplied to the hydraulic pressure chamber, a cylindrical valve body (40b) provided at the hydraulic pressure control mechanism, a line port (40A) provided in the valve body and supplied with a hydraulic fluid; a supply port (40B) provided in the valve body and supplying the hydraulic fluid; a spool valve (40G) disposed in the valve body and slidable along an inner surface of the valve body along

an axis, a linear solenoid valve (34) regulates hydraulic fluid pressure in a first conduit (40P1), the hydraulic pressure in the first conduit provides force against the spool valve in a first direction along the axis; at least one land portion provided at the spool valve and slidable along the inner surface of the valve body (col. 10, lines 29-65); a linear solenoid valve regulating a hydraulic pressure which controls physical relationship between the spool valve and the valve body. Wakahara et al. does not disclose a feedback conduit fluidly connects to the supply port, the hydraulic pressure in the feedback conduit acts on the spool valve and provides a force against the spool valve in a second direction that is opposite to the first direction; the hydraulic pressure in the first conduit and the hydraulic pressure in the feedback conduit together contribute to an overall force on the spool valve that controls the physical relationship between the spool valve and the valve body; and at least one recess provided at a wall of the inner surface of the valve body facing the outer surface of the spool valve wherein cross sectional opening area between the recess and the outer surface of the spool valve is continuously decreased in sliding direction of the spool valve from the opening portion. Lou discloses a feedback conduit (54) fluidly connects to the supply port (34), the hydraulic pressure in the feedback conduit provides a force against the spool valve in a second direction that is opposite to the first direction (page 1, para. 13-18). Lee discloses at least one recess (70) provided at a wall of the inner surface of the valve body facing the outer surface of the spool valve; wherein the cross sectional opening area being open to the inlet port between the recess and the inner surface of the valve body continuously changes in sliding direction of the spool valve, and the cross-

sectional opening area of the recess is formed to have a proportional relationship between flow quantity of a hydraulic fluid and moving distance of the spool valve (col. 7, lines 8-33).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the feedback conduit of Lou onto the hydraulic pressure control device of Wakahara et al., in order to provide stability to the valve (page 1, para. 7).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the recess of Lee onto the wall passageways of Wakahara et al. and Lou, in order to decrease the power actuating means (col. 7, lines 27-33).

### ***Conclusion***

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Sudani et al. (6,615,869) is the patent of the publication that is referred to above in the rejection. Arndt (5,913,577) and Brenk et al. (6,637,409) disclose a solenoid valve that controls a pressure chamber on a spool that is also equipped with a feedback channel. Wood et al. (4,923,172) disclose recesses in the valve body.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Craig M. Schneider whose telephone number is (571) 272-3607. The examiner can normally be reached on M-F 8:30 -5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eric Keasel can be reached on (571) 272-4929. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CMS *CMS*  
September 29, 2006



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